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H2E EDMA EEA

(56) Documents cited
EP 0468512 A2 EP 0311041 A2 US 4920642 A

(58) Field of search
UK CL (Edition L) H2E
INT CL[5] H01R

(54) Cable grounding connection for an electrical connector

(57) An electric connector for multi-coaxial cables (230) includes signal contacts and ground contacts (160), the latter sharing a common plate having multiple through holes (110) bored at regular intervals in an area to which shielding wires (231) of coaxial cables (230) are soldered. The coaxial cables (230) whose sheaths are bared to expose the shielding wires are inserted between the ground contacts (160) and ground strips (180) arranged across the ground contacts. The areas in which the coaxial cables (230) are inserted are soldered (190) to conduct electrically.

FIG 3

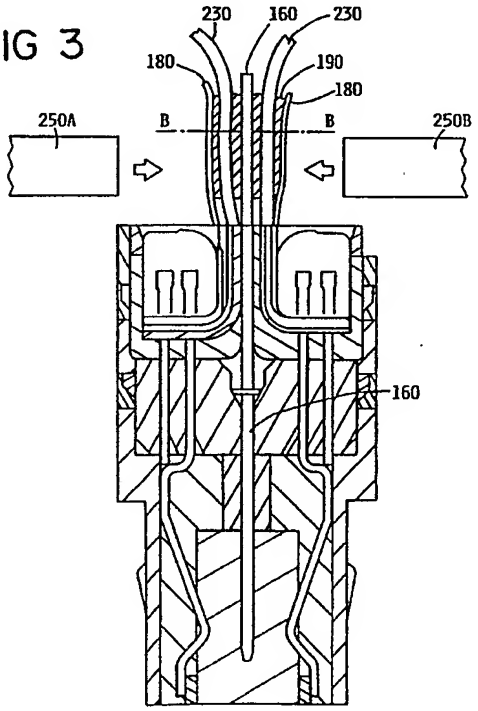

FIG. 2

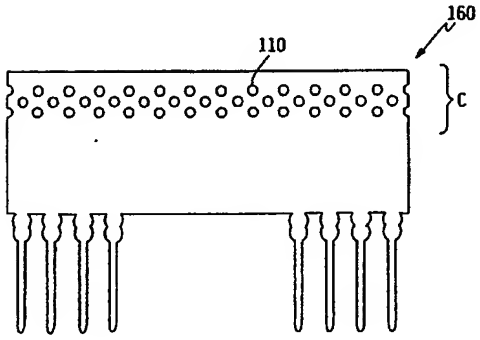

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FIG. 1

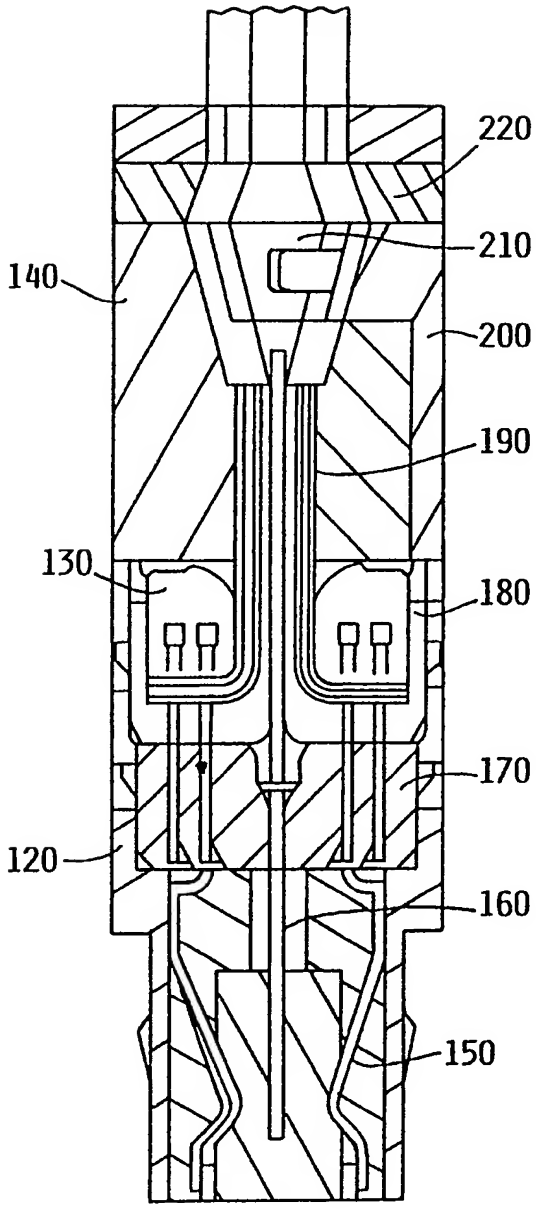


FIG. 2

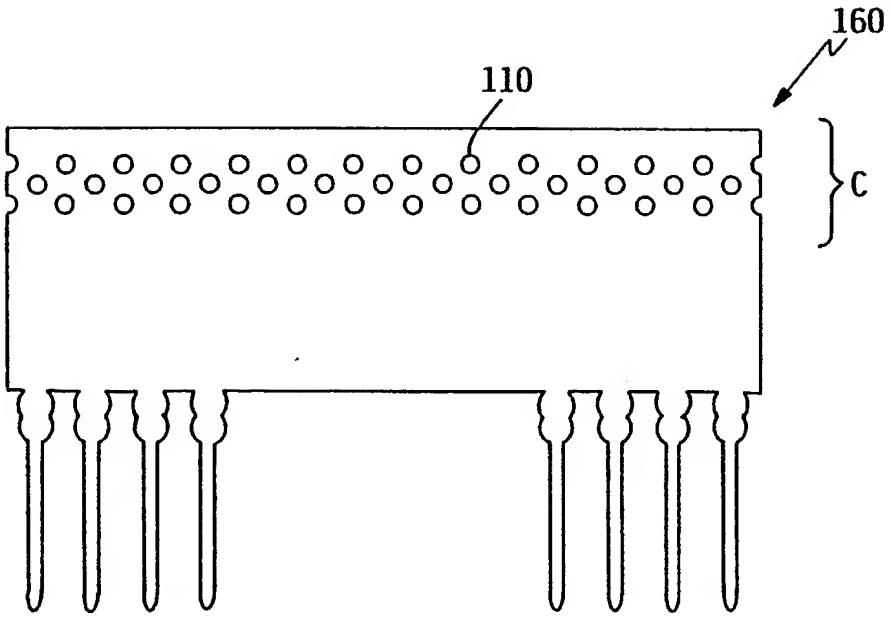


FIG. 3

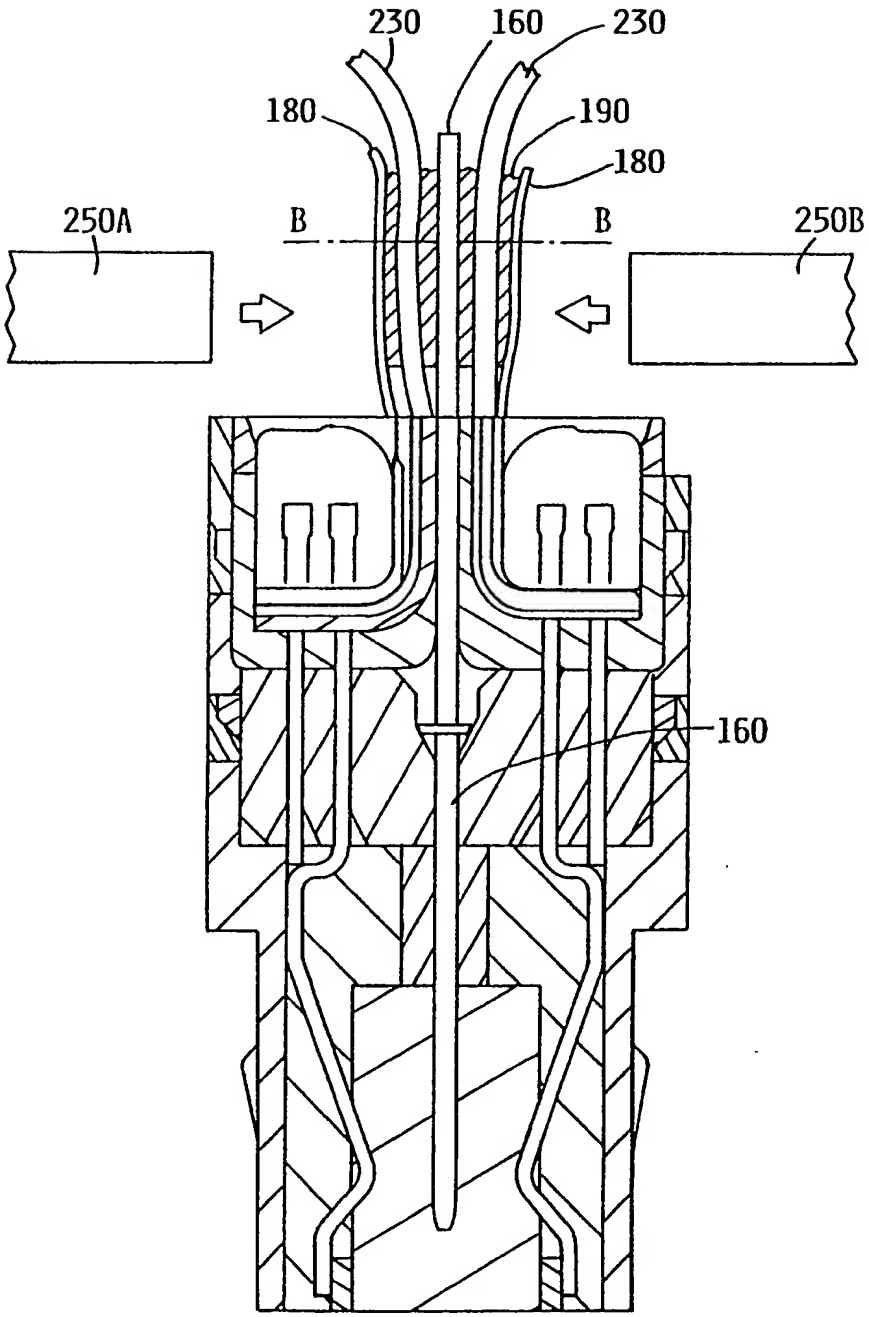


FIG. 4

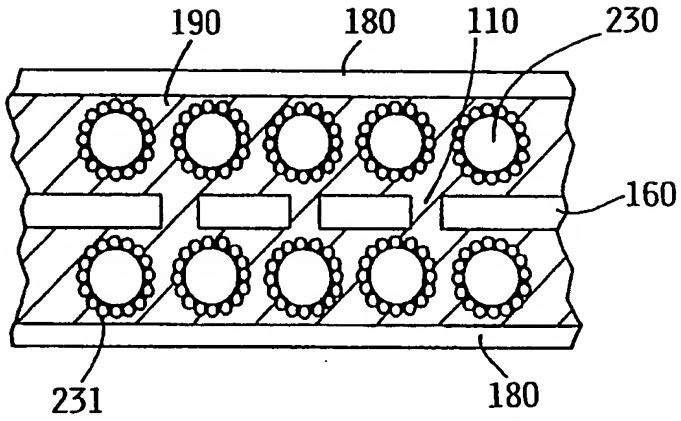


FIG. 7

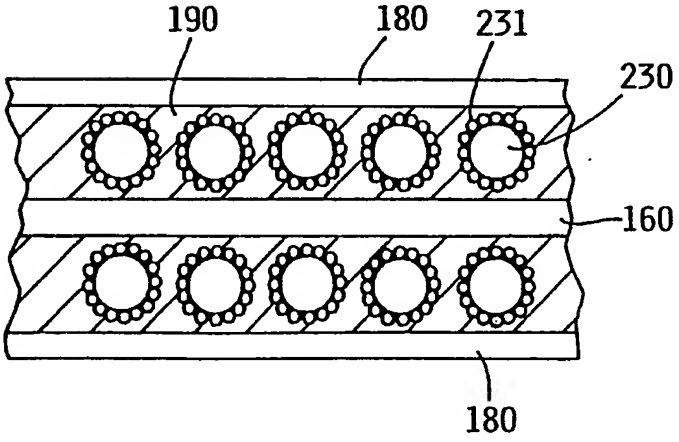


FIG. 5 (PRIOR ART)

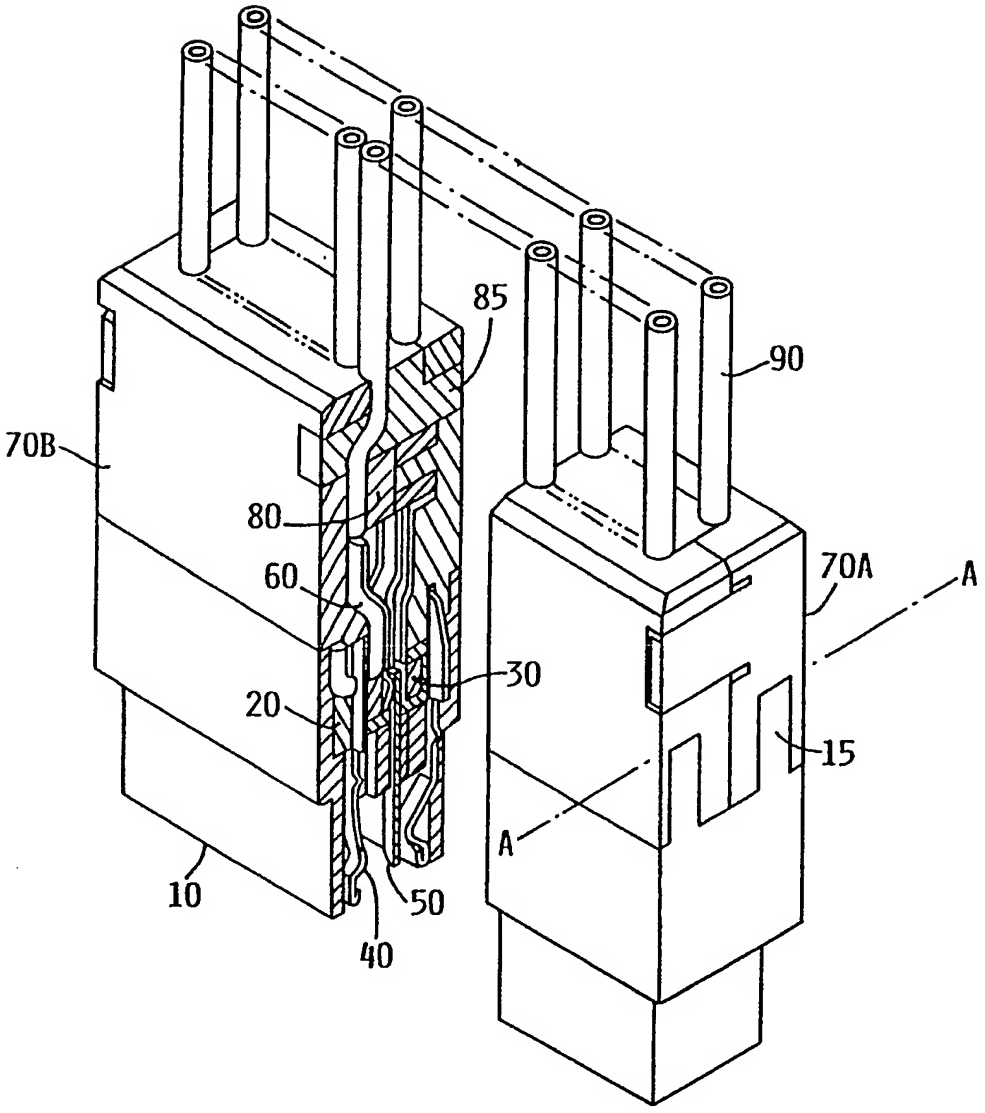
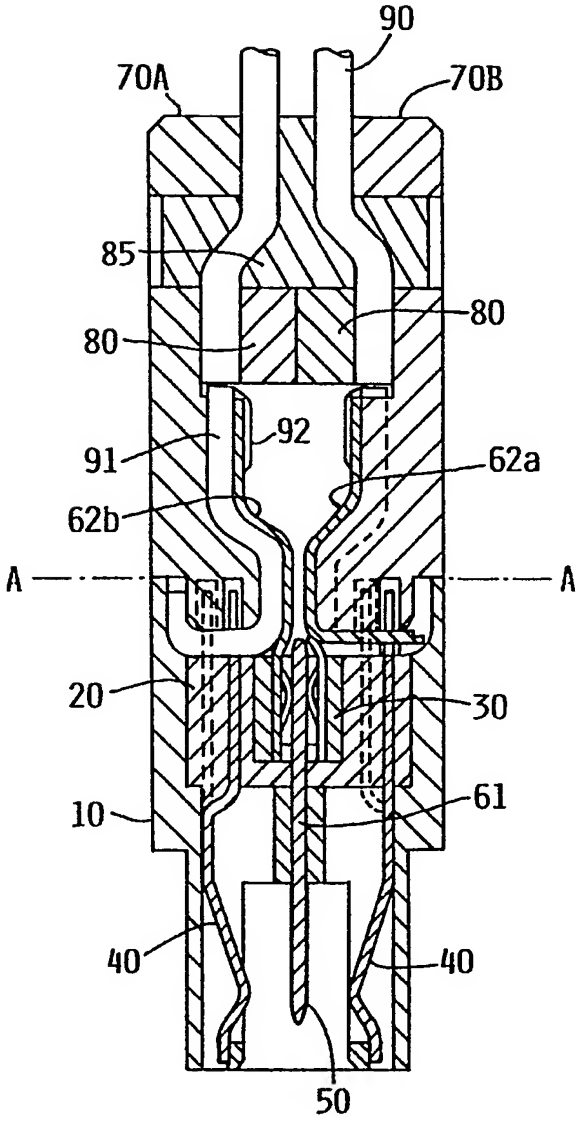


FIG. 6 (PRIOR ART)



ELECTRIC CONNECTOR FOR MULTI-COAXIAL CABLES

The present invention relates to an electric connector for multi-coaxial cables used for connecting electronic circuits. More particularly, this invention is concerned with the structure of ground contacts of an electric connector for multi-coaxial cables, and an electric connector for multi-coaxial cables having coaxial cables between signal contacts and ground contacts soldered.

Figure 5 a perspective view of a conventional connector, and Figure 6 shows a cross section of the center portion of the electric connector shown in Figure 5. In Figs. 5 and 6, 10 denotes a body, and 20, a contact array mold. 30 denotes grounds contact joining plates. 40 denotes signal contacts. 50 denotes ground contacts for header engagement. 62a and 62b are soldering sections. 70A and 70B denote shells. 80 denotes cable fixtures. 85 denotes an injection mold. 90 denotes coaxial cables, and 91 denotes coaxial cable wires. There have disclosed in Japanese Unexamined Patent Publication NO. 3-8277 as an example of an electric connector for multi-coaxial cables shown in Figs. 5 and 6.

PROBLEMS TO BE SOLVED BY THE INVENTION:

The foregoing conventional connector satisfied the conditions for high-density mounting of electric parts which is demanded from markets, but poses the problems below.

(1) In this connector, soldering is performed at two sections 62a and 62b. This necessitates two processes for assembly so that it increases handling-hours, and eventually the product price.

(2) In the aforesaid configuration, each of ground contacts comprises two parts; a header ground contact 50 and a cable assembly ground contact 61. When the contact point of these contacts is soldered and plated, a violent vibration or other environment condition may result in imperfect contact. This degrades contact reliability.

The object of the present invention is to provide an electric connector with high contact reliability in which ground contacts have a unified structure, thus speeding up soldering, and multiple through holes are bored on the upper part the ground contacts share and filled with solder, thus ensuring sufficient soldering strength.

The present invention adopts the structure below to solve the problems of the conventional connector.

(1) Each ground contact has a unified structure, including a contact point engaged with a header connector and a soldering section soldered to shielding wires of a cable. In this case, multiple circular or polygonal through holes 110 are bored at regular intervals in an upper part ground contacts share. Solder flows into these through holes, resulting in reliable soldering.

(2) Cable connection is improved to speed up soldering termination for soldering ground contacts

with shielding wires. Cables whose sheaths are bared to expose shielding wires are inserted between the ground contacts and ground strips arranged across the ground contacts. Then, the areas in which the cables are inserted are soldered. This structure makes it possible to complete soldering at one time. Solder can flow not only into the through holes described in (1) but also between the ground contacts and ground strips arranged across the ground contacts.

Figure 1 is a cross-sectional diagram showing an embodiment of an electric connector for multi-coaxial cables according to the present invention. Figure 2 is a side view of the ground contact shown in Fig. 1. Figure 3 is an explanatory diagram showing a soldering structure of the present invention. In Figures 1 to 4, 120 is a body. 130 denotes wire guides. 140 denotes a shell, and 150, signal contacts. 160 denotes ground contacts. 170 is a contact array mold. 180 denotes ground strips. 190 denotes soldering sections. 200 is a shell. 210 is a cable fixture. 220 denotes a unification mold. 230 denotes cables. 231 denotes shielding wires. 250A and 250B are soldering heaters.

As shown in the overall configuration of Fig 1, this invention provides a structure in which soldering can be completed in one process. As shown in Fig. 2, ground contacts of the present invention share an upper area C in which multiple circular through holes 110 are arranged in three rows in association with soldering points at which coaxial cables are soldered. These through holes are bores at regular intervals in association with contact pitches. Sufficient solder flows through these through holes and across the ground contacts.

Figure 3 shows a soldering structure of the present invention. Herein, solder bars 190 are placed among ground strips 180, coaxial cables 230, and ground contacts 160. Then, heater ships 250A and 250B for melting solder are brought into contact with outer surfaces of the ground strips simultaneously. Thus, the solder bars 190 are melted to complete soldering.

Figure 4 is an enlarged view of a B-B cross section of a main section shown in Figure 3. Figure 7 is an enlarged view of a B-B cross section of a main section in an example of prior art. As shown in Figs. 2 and 4, ground contacts 160 share an upper area in which multiple through holes 110 are bored. This assists in filling solder in the through holes. Compared with the example of prior art in which ground contacts 160 have no through holes 110, sufficient peeling strength of solder can be ensured.

As described previously, according to the present invention, (1) through holes are bored in an upper area ground contacts share. Thereby, sufficient solder can flow into the through holes. This provides satisfactory solder peeling strength in terminating shielding wires of coaxial cables. Compared with a conventional electric contact, soldering reliability is markedly improved. (2) Parts to be soldered can be soldered at one time. Therefore, the time required for assembling an electric contact of the present invention is less than that for assembling a conventional electric contact. This lessens the number of assembly processes and reduces production costs.

Figure 1 is a cross-sectional diagram showing an embodiment of an electric connector for multi-coaxial cables according to the present invention.

Figure 2 is a side view of ground contacts shown in Fig. 1.

Figure 3 is an explanatory diagram of a soldering structure according to the present invention.

Figure 4 is an enlarged view of a B-B cross section of a main section shown in Fig. 3.

Figure 5 is a perspective view of a conventional connector.

Figure 6 shows a cross sectional of the center portion of the electric connector shown in Fig. 5.

Figure 7 is an enlarged view of a B-B cross section of the conventional electric connector.

DESCRIPTION OF REFERENCE NUMERALS:

10: body
20: contact array mold
30: ground contact joining plate
40: signal contacts
50: header engagement ground contacts
61: cable compression ground contacts
70A or 70B: shell
80: cable fixtures
85: unification mold
90: coaxial cables
120: body

130: wire guides
140: shell
150: signal contacts
160: ground contacts
170: contact array mold
180: ground strips
200: shell
210: cable fixture
220: unification mold
230: coaxial cables
231: cable shielding wires

CLAIMS

(1) An electric connector for a multi-coaxial cable, and said electric connector having signal contacts and ground contacts, characterized in that said ground contacts have multi-holes periodically set in the upper area where the shielding wire of the coaxial cable are soldered to the ground contacts.

(2) An electric connector as claimed in Claim 1, further comprising the joining structure of the shielding wire in which the coaxial cable stripped of the shielding wire is held between the ground contacts and the ground strips provided to both sides of the ground contacts, and to which the held portion is soldered between the ground contacts and the ground strip to obtain the electric contact.

(3) An electric connector as claimed in Claim 1, substantially as herein described with reference to the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

Application number
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Relevant Technical fields

(i) UK Cl (Edition L) H2E

(ii) Int Cl (Edition 5) H01R

Search Examiner
MRS J BANNISTER

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search
29.1.93

Documents considered relevant following a search in respect of claims ALL

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X,P	EP 0468512 A2 (AMP) see ground contact (56)	1
X	EP 0311041 A2 (NEC) see ground contact (12)	1
X	US 4920642 (YANAI) see ground contact 38	1

Category	Identity of document and relevant passages	Relevant to claim(s.

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

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